

5.0 ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES

5.1 INTRODUCTION

This section describes the environmental consequences of implementing the primary Army action (disposal of excess property), and the secondary action to be taken by other parties (property reuse). The proposed actions are evaluated in the context of disposal alternatives and reuse scenarios presented in Section 3.

The impact discussion is divided into the following four major subsections:

- **No Action Alternative** - Analysis of impacts on resource attributes by study area (Subsection 5.3),
- **Disposal Alternatives** - Analysis of impacts of resource attributes by study area (Subsection 5.4) for the encumbered disposal alternative and the unencumbered disposal alternative,
- **Reuse Scenarios** - Analysis of impacts on resource attributes by study area (Subsection 5.5) for low intensity, medium intensity, and high intensity reuse scenarios, and
- **Cumulative Impacts** - Analysis of impacts of alternative actions on all areas (Subsection 5.6) to evaluate the cumulative impacts expected to occur given the ultimate disposal and reuse of all JPG excess property.

Resource impact assessment matrices have been included at the beginning of each major subsection to summarize the impacts of each alternative. The reader should refer to the corresponding text narrative for information regarding the specific nature and extent of impacts illustrated in these summary matrices.

5.2 DEFINITION OF KEY TERMS

The following paragraphs define key terms used throughout this section.

5.2.1 Direct versus Indirect Impacts

The terms impact and effect are synonymous as used in this EIS. Impacts may be determined to be beneficial or adverse, and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources of the installation and its environs. Definitions and examples of direct and indirect impacts as used in this document are as follows:

Direct Impact. A direct impact is caused by the proposed action and occurs at the same time and place. For example, a direct impact of the no action alternative (caretaker status) is the reduction in lawn areas to be mowed. An example of a direct impact associated with the Army's disposal of the JPG excess property is the potential loss of federal protection for buildings listed in the National Register. An example of a direct impact of property reuse may include the razing of existing structures to accommodate new development.

Indirect Impact. An indirect impact is caused by the proposed action and is later in time or farther removed in distance but still reasonably foreseeable. Indirect impacts may include induced changes in the pattern of land use, population density or growth rate, and related effects on air, water, and other natural and social systems. Referring to the possible direct impacts described above, a reduction in areas to be

mowed could have an indirect impact on area wildlife. The loss of federal protection for significant cultural resources may result in the deterioration or loss of these resources at some future date.

Application of Direct Versus Indirect Impacts. For direct impacts to occur, a resource must be present in a particular study area. For example, if highly erodible soils were disturbed in a given study area, there would be a direct impact to runoff and water quality from erosion at the construction site. This sediment laden runoff could indirectly affect water quality in adjacent study areas downstream from the construction site.

5.2.2 Short Term versus Long Term Impacts

In addition to indicating whether impacts are direct or indirect, the impact matrix summaries included in this section also distinguish between short and long term impacts. In this context, short and long term do not refer to any rigid time period and are determined on a case-by-case basis in terms of the environmentally significant consequences of the proposed action.

5.2.3 Cumulative Impacts

As described in Section 3.3, the Army anticipates disposal of the JPG property might be by a number of individual parcels over a period of time. Sections 5.3 through 5.5 have been prepared to facilitate disposal by parcel by describing impacts that are expected to occur within each of the 12 EIS study areas. These study areas should not necessarily be interpreted as proposed real estate disposal parcels. Rather, these areas have only been delineated to facilitate the NEPA impact evaluation process. For resources that are site specific, such as significant historic buildings, the cumulative impact of total installation disposal and reuse can be readily identified by adding the affected resources identified for each area. In addition, Section 5.6 evaluates the cumulative impact of disposing of all JPG excess property on resource categories that are more appropriately evaluated on an installation-wide or regional basis.

5.2.4 Mitigation - Definitions and Responsible Parties

Where significant adverse impacts are identified, this document describes measures that will or could be used to mitigate these effects. Mitigation generally includes:

- Avoiding the impact altogether by stopping or modifying the proposed action,
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation,
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment,
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and
- Compensating for the impact by replacing or providing substitute resources or environments.

In this EIS, Army mitigation commitments are limited to adverse impacts associated with the primary Army disposal action including the no action alternative (caretaker operation), and the encumbered disposal and unencumbered disposal alternatives. Army mitigation commitments associated with these actions are identified by the use of "will" in Sections 5.3

and 5.4. Only those mitigation measures that are practicable (i.e., can be accomplished as part of the primary action) have been identified.

Mitigation of adverse impacts associated with the reuse of the JPG is generally the responsibility of other federal, state, and local agencies and private entities that implement reuse and development plans. Mitigation by non-Army entities which would avoid or reduce adverse impacts caused by reuse are identified by the use of "could" in Section 5.5.

5.2.5 Significance

The term "significance" as used in NEPA requires consideration of both the context and intensity of the impact or effect under consideration. Significance can vary in relation to the context of the proposed action. For the JPG proposed actions, context may include consideration of effects on a national, regional, or local basis. Both short and long term effects may be relevant. Impacts are also evaluated in terms of their intensity or severity. Factors contributing to the intensity of an impact include:

The degree to which the action affects public health or safety,

The proximity of the action to resources which are legally protected by various statutes such as wetlands; resources listed in or eligible for the National Register of Historic Places; regulatory floodplains; and federally listed threatened or endangered species,

The degree to which the effects of the action on the quality of the human environment are likely to be highly uncertain or controversial,

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts, and

Whether the action threatens violation of federal, state, or local law imposed for the protection of the environment.

5.3 NO ACTION ALTERNATIVE - ANALYSIS OF IMPACTS ON RESOURCE ATTRIBUTES BY STUDY AREA

As stated in Section 3.2, closure and realignment of the JPG will result in the Army's placing the structures, utilities, and operation and maintenance systems into an inactive or "caretaker" status until the property disposal process is complete. Because the decision to close the JPG has been mandated by law, the no action alternative has been defined as maintaining the installation in caretaker status for an indefinite period of time.

5.3.1 Introduction

Caretaker actions are required to adjust for the reduced force and availability of operation and maintenance funding at the JPG. Initiation of caretaker status will result in modifications to existing installation operations and maintenance procedures and schedules. The length of time that specific parcels will remain in caretaker status may vary, depending on the time required to complete environmental and disposal actions. The following discussion of environmental consequences is based on the assumption that operations and maintenance on all excess property would be reduced to levels commensurate with no mission related activities.

Under caretaker status, the Army is committed to a minimum level of funding and staffing that maintains safety, security, and health standards. Some deterioration of real property

assets may occur. The direct and indirect effects of the no action alternative are graphically illustrated by EIS study area in Tables 5-1a and 5-1b. A discussion of the no action alternative by resource category is provided below.

5.3.2 Land Use

Direct. Placing the installation in caretaker status will not have a direct effect on existing land use patterns at the JPG.

Table 5-1a. Summary of No Action Alternatives														
Direct Impacts by Study Area														
STUDY AREAS	Study Area Resource Attributes													
	Land Use	Socioeconomic and Community Facilities	Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources	Water Resources	Hazardous Material and Hazardous Waste	
1. Wildlife Refuge	○ S ⊕	○ L ⊕	○ S ⊕	○ L ⊕	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ S ⊕	○ S ⊕	
2. Cantonment Area	○ S ⊕	○ L ⊕	○ L ⊕	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ S ⊕	○ S ⊕	
3. Southeastern Reserve	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
4. Northeastern Reserve	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
5. Northeastern Corner	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
6. Holton Parcel	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
7. Right of Way	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
8. Northwestern Parcel	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
9. Low-water Crossing	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
10. Southwestern Reserve	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
11. Air Gunnery Range	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
12. East-West Corridor	○ S ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	○ L ⊕	
● Significant Adverse ⊖ Adverse S Short Term Impact ⊕ Beneficial ○ No Impact L Long Term Impact														

Table 5-1b. Summary of No Action Alternative

Indirect Impacts by Study Area

STUDY AREAS	Study Area Resource Attributes												
	Land Use	Socioeconomic and Community Facilities		Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources	Water Resources
1. Wildlife Refuge	L ⊖	○	L ⊖	L ⊕	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
2. Cantonment Area	L ⊖	○	L ⊖	L ⊕	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
3. Southeastern Reserve	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
4. Northeastern Reserve	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
5. Northeastern Corner	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
6. Holton Parcel	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
7. Right of Way	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
8. Northwestern Parcel	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
9. Low-water Crossing	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
10. Southwestern Reserve	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
11. Air Gunnery Range	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
12. East-West Corridor	○	○	L ⊖	○	○	S ⊕	L ⊕	○	○	○	L ⊖	S ⊕	○
● Significant Adverse ⊖ Adverse S Short Term Impact ⊕ Beneficial ○ No Impact L Long Term Impact													

Indirect. The no action alternative could have an indirect adverse effect on existing land use patterns at JPG in Study Areas 1 and 2. If these areas are maintained in caretaker status for an extended period of time, the condition of buildings, facilities, stone arch bridges, roadways, and utility systems could be expected to decline. This deterioration could ultimately lead to a reduction in the suitability of these facilities to support uses similar to those associated with fully operational installation conditions.

5.3.3 Socioeconomics and Community Facilities

Direct. The no action alternative would be carried out via use of a contract labor force. The precise number of personnel to be involved in the caretaker force would be determined by the government's description of the statement of work and private sector contractors' bidding on a services contract. Manning of both skilled and unskilled labor jobs would provide a beneficial impact to the surrounding community of at least short duration.

Indirect. No indirect impacts are expected.

5.3.4 Public Health and Safety

Direct. The no action alternative will result in converting existing community facilities at the JPG from active to caretaker status. This action is not anticipated to have a direct impact on the facilities, but will result in a number of indirect effects as discussed below.

Indirect. Reduced staffing and funding for installation operations will likely affect law enforcement and installation security. Public access to the built-up portions of the installation will not be restricted during caretaker operations and traffic patterns will not be disrupted. The number of military and civilian personnel available to provide at least a casual presence to monitor or observe activities on the post would be reduced. This situation could result in illegal entry to unoccupied buildings and/or vandalism. The installation's outdoor recreation and natural areas could experience an increase in dumping, wildlife poaching, vandalism, and similar adverse activities. These impacts have been classified as adverse.

Fire protection for the facility will shift, becoming more dependent on community resources. This will result in increased response times.

Medical services provided through the existing medical clinic at the JPG will cease. Any health care services required by contractor staff will need to be provided by the City of Madison's existing facilities as listed in Section 4.4.3.

5.3.5 Utilities and Solid Waste

Utilities and solid waste impacts would occur primarily in Study Area 2, the Cantonment Area, south of the firing line. Reduced utilization and maintenance during a prolonged caretaker status would likely result in gradual deterioration of major utility components. Although such deterioration would be an adverse impact, caretaker actions would be adequate to prevent it from becoming significant. Specific segments of the JPG utilities systems are discussed below.

Direct. The amount of potable water needed at the facility would be significantly reduced, creating a beneficial impact related to water conservation. Compared to baseline operations, wastewater output would be significantly reduced under the no action alternative. No impacts with respect to storm water drainage are expected. Decreased use and maintenance of the electrical systems and heating plants during a prolonged caretaker period could result in deterioration of equipment and reduced service life. During caretaker status, the amount of solid waste generated at the JPG would be greatly reduced. Study Area 2 would experience the largest reduction in population as compared to baseline conditions, and a comparable reduction in solid waste generation would be expected to occur.

Indirect. Reduced potable water requirements at the JPG would result in a beneficial impact of there being more water available for use in the City of Madison. It is noted that this reduction may be temporary, as reuse of the facility comes on line. A new NPDES permit to

replace one lapsing in June 1995 would be required for continued wastewater treatment plant operations. Substantial reduction in daily vehicle trips would result in fewer automobile air emissions depositions and fewer vehicle contaminants (de-icing salts, lubricants, antifreeze) being conveyed by stormwater from parking lots to surface waters. Facilities requiring heat would be adversely impacted if deterioration of the steam or return lines led to a break in service. Reduction in solid waste generation during caretaker status would result in indirect beneficial impacts by reducing waste transportation costs and landfill space requirements.

5.3.6 Visual Resources

Direct. Decreased buildings and grounds maintenance activities such as mowing schedules, cleanup activities, and painting could result in limited short term adverse impacts on visual resources, particularly in Study Area 2. No long term or significant adverse impacts are expected to occur.

Indirect. No impacts are expected.

5.3.7 Cultural Resources

Direct. Decreased levels of activities and concomitant fewer personnel, along with a potential reduction in security personnel, could increase the opportunities for vandalism of known or potential historic structures in Study Areas 1, 2, 3, 4, 10, 11, and 12.

Indirect. The no action alternative would not result in any change from a fully operational baseline regarding the ability to protect archaeological resources at the JPG from adverse impacts. Cessation of operations would, except for environmental restoration activities, reduce the probability of construction and, hence, eliminate threats to the integrity of archaeological resources. Caretaker status would provide the Army additional time for further archaeological surveys and historic structures studies as found warranted under the MOA between the Army, Indiana SHPO, and the Advisory Council on Historic Preservation. These would create beneficial impacts on cultural resources.

5.3.8 Traffic and Transportation

Direct The no action alternative would result in substantial reduction of traffic entering and exiting JPG, creating long term beneficial impacts.

Indirect. Substantial reduction in daily vehicle trips would result in fewer automobile air emissions and fewer vehicle contaminants (e.g., de-icing salts, oil spills, etc.) being conveyed by storm water from parking lots to surface waters.

5.3.9 Noise

Direct. No impacts are expected.

Indirect. No impacts are expected.

5.3.10 Air Quality

Direct. Because of reduced heating requirements from the No. 2 fuel oil-fired boilers under caretaker status, a beneficial effect to the ambient air quality would be realized.

Indirect. No impacts are expected.

5.3.11 Geology, Soils, and Topography

Direct. As existing vegetative covers would be preserved and no modifications to topographic contours would be made under the no action alternative, no impacts to existing land forms are expected to occur.

Indirect. No impacts are expected.

5.3.12 Biological Resources

Direct. Caretaker status would create short term impacts in favor of small mammals, birds, reptiles, amphibians, and plants resulting from decreases in human activity, mowing, and automobile traffic. Fish species and amphibians inhabiting streams and lake environs would experience long term beneficial impacts under the no action alternative. Lower levels of human activity on the base would create lesser amounts of noxious or harmful stormwater runoff. Resident fauna populations would benefit from the decreased mowing which would allow areas to revert to "old field" or successional growth and create additional habitat for wildlife. Additional habitat would provide for more nesting sites, increase the food supply available to wildlife, provide cover from/for predators, and provide protection from severe weather. Reduced human activity brought about by the no action alternative could result in an increase in habitats preferred by federal and state endangered, threatened, and special concern species at the JPG.

Indirect. Long term indirect adverse impacts to high quality plant communities could occur if competition from exotic (non-native/introduced) plant species is not controlled. Exotics, having competitive advantages over native plants due to rapid growth rates and lack of natural pathogen and herbivore controls in their introduced ranges, pose potential for this impact. Reduction in the prescribed burning program to reduce or eliminate forest undergrowth could have an adverse impact on listed grassland species such as the shortear owl, northern harrier, and Henslow's sparrow.

5.3.13 Water Resources

Direct. No impacts are expected.

Indirect. Short term beneficial impacts are expected as automobile parking, use of de-icing salts, fertilizer use, fuel use and storage, pesticide spraying, and maintenance shop activities decrease in all study areas. These reductions, resulting in a decrease of these compounds in stormwater runoff and discharge into the waterways and wetlands, will lead to improved water quality at and downstream of the JPG.

5.3.14 Hazardous Materials and Hazardous Waste

Direct. Short term positive impacts would occur because virtually all hazardous materials use and hazardous waste generation would cease. Remediation within these areas would be accelerated as a result of the cleanup BRAC action when compared to baseline conditions. No long term impacts would occur because necessary remediation actions would occur or be in operation and approved by the EPA prior to disposal of the property.

Indirect. No impacts are expected.

5.3.15 Mitigation

The no action alternative is expected to create several adverse impacts, including potential deterioration of buildings and facilities associated with reduced maintenance and heating/cooling levels as the buildings are vacated by Army activities, reduction in the use and maintenance of utility systems resulting in deterioration of these systems over time, and reduction in visual values of Study Area 2 associated with reduced maintenance funding, schedules, and staff. There would also be potential for increased initial response time for fire protection on-site and increased potential for exposure to UXO, thereby increasing concerns for safety.

The potential for adverse impacts to installation real property assets would increase proportionally with the period the installation is held in caretaker status. The Army will implement the following mitigation measures to ensure that adverse impacts do not reach significant levels during caretaker status:

Abide by the terms of the MOA with the Indiana SHPO and the Advisory Council on Historic Preservation for protection of archaeological and historic resources,

Provide installation security and maintenance operations to the extent provided by Army policies and regulations for the duration of the caretaker period, and transfer responsibilities for these functions to non-Army entities as soon as possible to minimize service disruption,

Identify clean or remediated parcels for early disposal and reuse, and prioritize restoration and cleanup activities to ensure timely disposal and reuse of remaining parcels,

Maintain necessary natural resources management measures (e.g., annual deer hunts to preclude problematic rises in the deer population), and

Maintain accelerated efforts regarding environmental restoration and consider interim lease arrangements when leases will not interfere with remedial operations.

5.4 DISPOSAL ALTERNATIVES - ANALYSIS OF IMPACTS ON RESOURCE ATTRIBUTES BY STUDY AREA

5.4.1 Introduction

Section 3.3 discusses the rationale associated with the development of alternatives to the primary Army action of disposal of excess property at JPG. The encumbered disposal alternative has been formulated to consider the type and degree of reuse constraints to be imposed on future owners by the Army as a condition of disposal and reuse. These encumbrances are imposed by the Army to protect future Army requirements or interests, to make the property available as soon as possible through the expedient disposal and reuse of parcels that are determined to be available and suitable for the intended reuse, to transfer the responsibility to protect important natural or cultural resources to future owners through the use of deed restrictions or covenants, or to meet special mitigation requirements or additional deed restrictions that are mutually agreed upon by the Army and a regulatory agency.

The unencumbered disposal alternative has been included to identify and evaluate the potential to remove encumbrances so that property can be disposed of with fewer or no Army-imposed restrictions to future use.

The encumbered disposal alternative and unencumbered disposal alternatives relate to existing or potential restrictions affecting the JPG property. These restrictions are enumerated in Section 4.15. In some instances, some encumbrances affect one or more study areas extensively while having no effect on other study areas. Some study areas are affected by multiple encumbrances. In most instances, potential impacts created by the presence or absence of encumbrances upon Study Areas are indistinguishable.

Sections 5.4.2 through 5.4.15 identify the environmental consequences of these disposal alternatives. The direct and indirect effects of the encumbered disposal and unencumbered disposal alternatives are graphically illustrated by the EIS study areas in Tables 5-2a and 52b.

5.4.2 Land Use

Encumbered Disposal Alternative, Direct. The UXO encumbrance would prohibit activities that would cause any disturbance to the terrain in areas north of the firing line (Study Areas 3-12 and portions of 1). This would leave the property in a natural state, tending thereby to have an immediate beneficial impact on flora and fauna. Utilities interdependencies would necessitate central management of utilities, which in turn would tend to create consistent land uses under control of a central entity. The remedial action encumbrance would tend to delay development of property to its highest and best use.

Encumbered Disposal Alternative, Indirect. Inclusion of the UXO encumbrance helps to shape land use patterns adjacent to the JPG. The surface water quality protection encumbrance increases the natural resource values of JPG property, leading to conditions making passive and non-consumptive land uses appropriate. Inclusion of the air gunnery buffer zone encumbrance around Study Area 11 promotes land use planning for adjacent parcels to be compatible with military training. The reversionary clause provides a source of additive expertise with respect to activities that may occur in an area. The sum total of these indirect impacts is a long term beneficial impact.

Unencumbered Disposal Alternative, Direct. Disregard for the UXO encumbrance invites potential for land uses inappropriate to the level of risk posed by the unexploded ordnance. Disregard for the DU encumbrance could also expose persons to health risks. Deletion of the surface water quality protection encumbrance allows development of land uses less protective of water resources such as agriculture, residential areas, and construction of impervious structures *which yield* storm water runoff. Army investment in utility systems to make them independent as to each disposal parcel could lead to uncoordinated development among adjacent owners. Elimination of deed restrictions protective of archeological and historical resources could jeopardize the community's recordation and appreciation of its history. Considerable investment of Army resources would be required to eliminate the remedial action encumbrance; interim measures such as leasing or disposal of environmentally clean parcels provide earlier reuse of property. Elimination of the reversionary clause and wetlands encumbrances could result in new owner reuse development that would be inconsistent with the proposed reuse of the majority of the JPG as a wildlife refuge. These matters would result in long term adverse impacts.

Unencumbered Disposal Alternative, Indirect. No impacts are expected.

5.4.3 Socioeconomics and Community Facilities

Encumbered Disposal Alternative, Direct. No impacts are expected.

Encumbered Disposal Alternative, Indirect Implementation of the UXO encumbrance would result in an adverse impact to areas north of the firing line (Study Areas 3-12 and portions of 1) because their development for positive socioeconomic benefit would be prohibited. The

Table 5-2a
Summary of Encumbered and Unencumbered Disposal Alternatives
Direct Impacts by Study Area

STUDY AREAS	Study Area Resource Attributes										
	Land Use	Socioeconomic and Community Facilities	Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources
1. Wildlife Refuge											
Encumbered Disposal	S ⊕	○	○	○	○	○	○	○	○	○	○
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	S ⊕	L ⊕	L ⊕	○	○	S ⊕	L ⊕	L ⊕
2. Cantonment Area											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	S ⊕	○	○	○	○	S ⊕	○	L ⊕
3. Southeastern Reserve											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
4. Northeastern Reserve											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
5. Northeastern Corner											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
6. Holton Parcel											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
7. Right of Way											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
8. Northwestern Parcel											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
9. Low-water Crossing											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
10. Southwestern Reserve											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
11. Air Gunnery Range											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
12. East-West Corridor											
Encumbered Disposal	S ⊕	○	○	○	L ⊕	○	○	○	○	○	L ⊕
Unencumbered Disposal	L ⊕	L ⊕	L ⊕	○	L ⊕	○	○	○	S ⊕	L ⊕	L ⊕
⊕ Significant Adverse ⊖ Adverse S Short Term Impact ⊕ Beneficial ○ No Impact L Long Term Impact											

Table 5-2b.
Summary of Encumbered and Unencumbered Disposal Alternatives
Indirect Impacts by Study Area

Study Areas	Study Area Resource Attributes													
	Land Use	Socioeconomic and Community Facilities		Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources	Water Resources	Hazardous Material and Hazardous Waste
1. Wildlife Refuge														
Encumbered Disposal	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	S⊕	L⊕	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
2. Cantonment Area														
Encumbered Disposal	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	S⊕	L⊕	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	O	O	L⊕	L⊕
3. Southeastern Reserve														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
4. Northeastern Reserve														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
5. Northeastern Corner														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
6. Holton Parcel														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
7. Right of Way														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
8. Northwestern Parcel														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
9. Low-water Crossing														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
10. Southwestern Reserve														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
11. Air Gunnery Range														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
12. East-West Corridor														
Encumbered Disposal	L⊕	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	S⊕	O	L⊕	L⊕	L⊕	O
Unencumbered Disposal	O	L⊕	L⊕	O	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕	L⊕
● Significant Adverse ⊕ Adverse S Short Term Impact ⊕ Beneficial O No Impact L Long Term Impact														

surface water quality protection encumbrance would also have an adverse effect on socioeconomics by inhibiting recreational activities and limiting road crossings over streams. Cost associated with central management of utilities functions could frustrate economic development, resulting in negative impacts on socioeconomic conditions. The restrictions against structural modifications imposed by the cultural resource encumbrances would, over the long term, exert an adverse impact by limiting reuse of no more than medium intensity reuse and, thereby, only moderate job creation and economic growth.

Unencumbered Disposal Alternative, Direct. Completion of remedial actions prior to disposal would result in a positive socioeconomic impact.

Unencumbered Disposal Alternative, Indirect Elimination of encumbrances would facilitate unlimited development of the JPG, resulting in a long term beneficial impact.

5.4.4 Public Health and Safety

Encumbered Disposal Alternative, Direct. A buffer zone surrounding Study Area 11 would protect the public from noise and risks of UXO associated with use of the air gunnery range. This would provide a long term beneficial impact to public health and safety.

Encumbered Disposal Alternative, Indirect. For all study areas, a surface water quality protection clause could reduce the amount of contaminants and particulates in the surface water, thereby creating a positive impact on public health and safety via direct contact with the surface water pathway. Remedial actions would create a long term beneficial impact by facilitating restoration actions promoting human health and protection of the environment.

Unencumbered Disposal Alternative, Direct. In Study Areas 1 and 3-12, elimination of the UXO encumbrance would result in a long term adverse impact to public health and safety as UXO is detonated. Encumbrances related to remedial actions may be eliminated prior to disposal or transfer of the property only by achieving restoration program goals. Removal of such encumbrances prior to completion of remedial action would be premature and could potentially create long term adverse impacts on health.

Unencumbered Disposal Alternative, Indirect. Deletion of the surface water quality protection encumbrance could result in increased pollutants in the surface water via storm water runoff, permitted discharges, and the like where the public could be exposed to them in any of the Study Areas. Removal of the air gunnery buffer zone related to Study Area 11 could result in the general public coming into contact with harmful noise levels or UXO. Decentralization of the utilities in Study Area 2 could result in adverse impacts through increased use of fossil fuels at decentralized sites.

5.4.5 Utilities and Solid Waste

Encumbered Disposal Alternative, Direct. No impacts are expected.

Encumbered Disposal Alternative, Indirect Cost associated with maintenance and central management of interdependent utilities could frustrate economic development of Study Area 2 and have long term adverse impacts on socioeconomic conditions.

Unencumbered Disposal Alternative, Direct. Disposal or transfer of the facilities in a condition suitable for use by a wide variety of owners would generate increased amounts of solid waste and adversely impact noise and air quality (fugitive dust associated with construction) in Study Area 2.

Unencumbered Disposal Alternative, Indirect No impacts are expected.

5.4.6 Visual Resources

Encumbered Disposal Alternative, Direct. The encumbrance created by the memorandum of agreement obligating the Army to survey and inventory historical structures would result in a long term beneficial impact to all study areas.

Encumbered Disposal Alternative, Indirect. Long term benefits to visual resources could be gained through application of the surface water quality protection clause. These benefits would arise in all study areas.

Unencumbered Disposal Alternative, Direct. Elimination of sale or transfer document clauses prohibiting terrain disturbance in any study areas except Study Area 2 could be achieved only upon complete decontamination of the JPG of UXO north of the firing line and DU in the DU impact area. Accomplishment of this would, however, result in long term adverse impacts to visual resources in those study areas based on severe alteration of topography and removal of vegetation that would be required.

Unencumbered Disposal Alternative, Indirect. Elimination of the historic structures encumbrance would result in long term adverse impacts by permitting degradation of historic and aesthetic qualities that presently exist in Study Area 1 and, possibly, other study areas.

5.4.7 Cultural Resources

Encumbered Disposal Alternative, Direct. Under this alternative, it is anticipated that deed restrictions would be incorporated in any property sale or transfer requiring future owners to protect significant archaeological sites and historic buildings to the same extent that they are currently protected under federal ownership. No direct impacts are expected when this alternative is compared to baseline operations.

Encumbered Disposal Alternative, Indirect. Under this alternative, deed restrictions ensuring protection of National Register eligible properties would be passed on to the new owners as a condition of property sale or transfer. However, the new owners may at some future date seek to lessen or remove the deed restrictions, resulting in a degradation or loss of the historic property. This is considered an indirect impact because the future date that covenants might be *relied* upon is unknown.

Unencumbered Disposal Alternative, Direct This alternative would have an adverse impact on National Register eligible archaeological and architectural resources at the JPG by withdrawing federal protection. The inventory and recordation measures to be completed as part of the MOA between the Army, Indiana SHPO, and Advisory Council on Historic Preservation would help to mitigate for the loss of these properties. However, additional consultation between the parties would be necessary to determine appropriate treatment measures for National Register eligible properties to be transferred from federal ownership without protective deed restrictions.

Unencumbered Disposal Alternative, Indirect. This alternative would result in a long term adverse impact associated with the loss of National Register eligible properties. As a result, people living in the vicinity of the JPG would lose these components of their historical heritage and archaeological data base.

5.4.8 Traffic and Transportation

Encumbered Disposal Alternative, Direct No impacts are expected.

Encumbered Disposal Alternative, Indirect. Implementing the surface water quality protection clause would adversely impact traffic and transportation by inhibiting construction of low water crossings and reducing the amount of parking lots that could be constructed. These impacts would arise in all study areas.

Unencumbered Disposal Alternative, Direct. No impacts are expected.

Unencumbered Disposal Alternative, Indirect. Elimination of the reversionary clauses could provide long term benefits to traffic and transportation resources in all study areas by permitting construction of roads wherever desired (as opposed to where needed).

5.4.9 Noise

Encumbered Disposal Alternative, Direct. Maintenance of a buffer zone around Study Area 11 would result in long term beneficial impacts concerning air gunnery range noise potentially affecting Study Area 8.

Encumbered Disposal Alternative, Indirect. Some remedial activities such as well installation or construction of a pump and treat facility may create localized short term adverse impacts concerning noise. These could occur in any of the study areas.

Unencumbered Disposal Alternative, Direct. Elimination of the Air Gunnery Range Buffer Zone encumbrance could periodically result in unacceptable noise levels in Study Area 8 and would have a long term adverse impact on development in that area.

Unencumbered Disposal Alternative, Indirect. Elimination of the reversionary clause could result in localized, higher intensity land uses that would be inconsistent or incompatible with the proposed use of Study Area 1. This would create a long term adverse impact.

5.4.10 Air Quality

Encumbered Disposal Alternative, Direct. No impacts are expected.

Encumbered Disposal Alternative, Indirect. Over the long term, imposition of deed restrictions allowing the Army right of re-entry to maintain hazardous waste site remedial measures would have a beneficial impact to ensure their proper operation and to enhance abatement of any environmental threats that might become airborne. Such remedial measures likely would be concentrated in Study Area 2 and major portions of Study Area 1.

Unencumbered Disposal Alternative, Direct. Detonation of unexploded ordnance, a necessary antecedent of eliminating the UXO encumbrance, would result in short term adverse impacts to air quality affecting all study areas.

Unencumbered Disposal Alternative, Indirect. Decentralization of utilities would result in the proliferation of smaller fossil fuel-burning heating units. This would cause long term adverse impacts to air quality (particulate matter and hydrocarbon emission) affecting all study areas.

5.4.11 Geology, Soils, and Topography

Encumbered Disposal Alternative, Direct. No impacts are expected.

Encumbered Disposal Alternative, Indirect. Long term beneficial impacts to soils would be expected as a result of the remediation actions encumbrance ensuring cleanup of hazardous waste sites occurring in all study areas.

Unencumbered Disposal Alternative, Direct. Monition of unexploded ordnance, a necessary antecedent of eliminating the UXO encumbrance, would result in long term adverse impacts to geology and topography in all study areas north of the firing line, Study Areas 3-12 and portions of 1.

Unencumbered Disposal Alternative, Indirect. Detonation of UXO in areas north of the firing line (Study Areas 3-12 and portions of 1) could lead to erosion of top soils and cause contamination of soils and creation of rills and gullies. These effects would be long term and adverse. Elimination of the wetlands encumbrance would also result in long term adverse impacts to soils.

5.4.12 Biological Resources

Encumbered Disposal Alternative, Direct. Implementation of the reversionary clause encumbrance creates long term benefit to biological resources in all study areas by making trained natural resource specialists and professional oversight available to developers and land owners.

Encumbered Disposal Alternative, Indirect. Implementation of the UXO encumbrance would result in long term beneficial impacts by avoiding destruction of habitats that would be involved in remediation of contaminated areas. An encumbrance protecting surface water quality would have a beneficial impact on biological resources through helping to furnish relatively contaminant-free water. The air gunnery buffer zone encumbrance will provide a beneficial impact as it will provide a safe haven for some species of wildlife already adapted to the area. Some remedial actions may adversely affect biological resources in the short term through the implementation of the actions (e.g., clearing roads for drill rigs), thereby altering biota in the process. Except for that related to Study Area 11, all these effects would occur throughout all study areas.

Unencumbered Disposal Alternative, Direct. Detonation of unexploded ordnance, a necessary antecedent of eliminating the UXO encumbrance, would result in long term significant adverse impacts to biological resources in all study areas except Study Area 2. In-place detonation of unexploded ordnance north of the firing line would adversely affect flora, fauna, and their habitats. Elimination of the wetlands encumbrance could adversely **affect** flora, fauna, and habitat in the wetlands areas. Similar impacts would accompany decontamination of the DU impact area in Study Area 1.

Unencumbered Disposal Alternative, Indirect. Erosion from areas impacted from the detonation of UXO could choke streams and wetlands, thereby adversely affecting flora and fauna. Potentially hazardous metals constituents remaining after UXO is detonated could contaminate remaining biota. These impacts would occur in all study areas except Study Area 2. Failure to maintain existing high quality surface water would lead to long term adverse impacts on biological resources in all study areas.

5.4.13 Water Resources

Encumbered Disposal Alternative, Direct. Implementation of the reversionary clause encumbrance creates long term benefit on water resources in all study areas by making professional natural resources oversight available to developers and land owners.

Encumbered Disposal Alternative, Indirect. The surface water quality protection clause would have a long term beneficial impact on the water resources in all study areas. Inclusion in sale or transfer documents of restrictions permitting the Army to perform necessary maintenance and operation of hazardous waste site remedial measures would have a long term beneficial effect on surface water and groundwater resources. Abatement of hazardous constituents in surface and subsurface soils would prevent contamination from leaching into the

groundwater and/or eroding into the surface water. Elimination of contaminant sources subject to stormwater runoff would beneficially affect fish and wildlife relying on the surface water in all study areas.

Unencumbered Disposal Alternative, Direct. Elimination of the wetlands and surface water encumbrances could result in long term adverse affects to water resources in all study areas, especially in Study Area 1.

Unencumbered Disposal Alternative, Indirect. Degradation of surface water quality, connected to detonation of unexploded ordnance or failure to take protective measures, could result in long term adverse impacts to all biota at the JPG which rely on those water resources. These effects would be expected to occur in all study areas.

5.4.14 Hazardous Materials and Hazardous Waste

Encumbered Disposal Alternative, Direct The Comprehensive Environmental Response, Compensation, and Liability Act requires federal government property transfers by deed to contain a covenant warranting that all remedial action necessary to protect human health and the environment with respect to any hazardous substance remaining on the property has been taken before the date of transfer.

Under some circumstances, the federal government may transfer property with deed restrictions related to implementing an approved remedial action or relating to a remedy which is in place and working effectively but the contamination has not yet been remediated. Deed restrictions might be required to protect any remaining contamination or remedial action, and to provide the government with access for continued remediation operation and monitoring.

Specific parcels that may be transferred in an encumbered status would be identified by the Army through the completion of remedial investigations. There would be coordination with regulatory and local reuse planning agencies to identify proposed reuse activities and the appropriate level of cleanup actions required to comply with actual reuse. The remediation process is occurring as a separate and distinct process and will not be completed prior to the completion of this EIS. The remediation process is designed to protect human health and the environment from hazardous substances releases.

Encumbered Disposal Alternative, Indirect. Encumbered disposal allows for disposal of property undergoing remediation or to effect approved remedies. Deed notices and enforceable deed restrictions would be used to disclose the specific nature of remaining or existing hazards to the new owner or to ensure continued protection of human health and the environment. The deed would also specify that the new owner would be responsible for any future remediation of these hazards if conditions or the intended use change. Enforcement of these provisions would be the responsibility of the applicable state and federal agencies. Given these conditions, no impacts are anticipated.

Unencumbered Disposal Alternative, Direct. Under this alternative, long term beneficial impacts would occur in all 12 study areas because the army would complete the environmental remediation process for all identified hazards and dispose of the property with no restrictions for future uses wherever feasible.

Unencumbered Disposal Alternative, Indirect. For all areas, there would be beneficial long term impacts because the remediation process would eliminate any potential for contamination to migrate off-site and affect adjacent areas.

5.4.15 Mitigation

To avoid, reduce, or compensate for adverse impacts that might occur as a result of disposal, the Army will:

Continue to work with local entities to identify available actions regarding the use of buildings not having independent utilities systems. If no feasible alternatives are identified, the Army will encumber the sale of the buildings supported by the facility with deed notification that the utilities are not available from the Army, and that new owners would be responsible for alternative sources effective the date of property conveyance.

Continue to work with the local community reuse committee and/or local redevelopment authorities to ensure that, to the maximum extent feasible, encumbered disposal transactions are consistent with its reuse plan.

Complete the cultural resource surveys pursuant to the final executed Memorandum of Agreement between the Army, the Indiana SHPO, and the Advisory Council on Historic Preservation.

Maintain installation buildings, infrastructure, and natural resources in caretaker status to the extent provided by Army policy and regulations and as mandated by applicable federal and state laws.

The Army will develop, for inclusion in conveyance documents, language which identifies conditions and obligations concerning natural and cultural resources applicable to the transaction levied on future owners. Tailored clauses will address significant archaeological and historic resources and notify owners of operating and management restrictions as provided in the Memorandum of Agreement. Tailored clauses will also notify owners of any remaining hazardous materials contamination consistent with all applicable laws and regulations. Where parcels are known to support endangered or threatened wildlife or plants species or their habitat, tailored clauses would also provide relevant notification to future owners.

5.5 REUSE SCENARIOS - ANALYSIS OF IMPACTS ON RESOURCE ATTRIBUTES BY STUDY AREA

5.5.1 Introduction

The reuse scenarios evaluated in this EIS are referenced as the HIR scenario, MIR scenario, and LIR scenario. As noted in Section 3.4, these reuse scenarios do not attempt to predict the exact nature or pattern of reuse activities that will ultimately occur at the JPG. The scenarios are beneficial in identifying the range of impacts that would be expected to occur under various levels of reuse intensity.

Sections 5.5.2 through 5.5.15 identify the environmental consequences of these reuse scenarios. The reuse scenarios are evaluated based on the assumption that the Army will proceed with the encumbered disposal alternative. The direct and indirect effects of the LIR, MIR, and HIR scenarios are graphically illustrated by EIS study areas in Tables 5-3a and 5-3b. As these tables show, not all intensity categories are evaluated for each study area.

5.5.2 Land Use

High Intensity Direct Impacts. Seven of the twelve study areas (2-6, 8, 10) would be affected by the HIR scenario. With the exception of Study Area 2 (the cantonment area), these areas encompass undeveloped lands used principally as safety and buffer zones for the JPG's primary mission. In the context of adjacent agricultural and rural land uses, generally low development levels of infrastructure, and relative isolation from other developed areas, conversion of these areas to high intensity use would create long term significant adverse impacts to local land uses patterns and planning. Moreover, development of Study Areas 3-6, 8, and 10, all of which border the proposed wildlife refuge could, at their points of interface, create incompatible adjacent land uses.

High Intensity Indirect Impacts. Significant long term adverse impacts would occur in Study Areas 3-6, 8, and 10. Given the current medium intensity use of Study Area 2, that area would incur long term adverse impacts. Long term significant adverse impacts associated with these Study Areas would include large increases in traffic and resultant noise and air pollution impacts. Increased stormwater runoff to adjacent property and streams would also result from the significant increase in impervious surfaces, and visual and aesthetic resources would be substantially degraded. Short term adverse impacts would include noise and truck traffic associated with development activities. Increased demands would be placed on the existing infrastructure and community services, including roads, utilities, schools, and police and fire protection.

Medium Intensity Direct Impacts. Nine of the twelve study areas (2-8, 10, 12) would be affected by the MIR scenario. With the exception of Study Area 2, all would be developed to a level exceeding their baseline condition. Except for Study Area 2, these areas encompass undeveloped lands used principally as safety and buffer zones for the JPG's primary mission. In the context of adjacent agricultural and rural land uses, generally low development levels of infrastructure, and relative isolation from other developed areas, conversion of these areas to medium intensity use could create long term adverse impacts to local land uses patterns and planning. Development of Study Areas 3-8, 10, and 12, all of which border the proposed wildlife refuge could, at their points of interface, constitute incompatible adjacent land uses.

Medium Intensity Indirect Impacts. Adverse impacts, of a lesser scale and magnitude, would be similar to those described under the HIR scenario.

Low Intensity Direct Impacts. The LIR scenario would involve 10 of the 12 study areas (1-6, 8-11). Study Area 2 would regress from its current medium intensity use, most likely by application of employment and population density limitations.

No adverse impacts as a result of low intensity reuse would be expected. Study areas abutting the proposed wildlife refuge would presumably include land use planning measures such as set-back, areal density, and activity restrictions, all designed to avoid incompatibilities with the purposes of the refuge.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.3 Socioeconomics and Community Facilities

High Intensity Direct Impacts. High intensity reuse of 7 of the 12 study areas (2-6, 8, 10) would create significant beneficial impacts with respect to jobs creation.

High intensity reuse of land used for office space or a business park typically involves a 0.25 ratio of floor space to land or lot surface area, and employee density typically averages one employee per 250 square feet of office space (see Table 3-2). Thus, an acre of land may

Table 5-3a. Summary of Reuse Alternatives												
Direct Impacts by Study Areas												
Study Areas	Study Area Resource Attributes											
	Land Use	Socioeconomic and Community Facilities	Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources	Water Resources
1. Wildlife Refuge												
LIR Alternative		⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
2. Cantonment Area												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
3. Southeastern Reserve												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
4. Northeastern Reserve												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
5. Northeastern Corner												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
6. Holton Parcel												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
7. Right of Way												
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
8. Northwestern Parcel												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
9. Low-water Crossing												
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
10. Southwestern Reserve												
HIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
11. Air Gunnery Range												
LIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
12. East-West Corridor												
MIR Alternative	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕
● Significant Adverse ⊕ Adverse S Short Term Impact ⊕ Beneficial ○ No Impact L Long Term Impact												

Table 5-3b. Summary of Reuse Alternatives Indirect Impacts by Study Area												
Study Areas	Study Area Resource Attributes											
	Land Use	Socioeconomic and Community Facilities	Public Health and Safety	Utilities and Solid Waste	Visual Resources	Cultural Resources	Traffic and Transportation	Noise	Air Quality	Geology, Soils, and Topography	Biological Resources	Water Resources
1. Wildlife Refuge												
LIR Alternative												
2. Cantonment Area												
HIR Alternative	L	L								L		L
MIR Alternative	L	L								L		L
LIR Alternative												
3. Southeastern Reserve												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
4. Northeastern Reserve												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
5. Northeastern Corner												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
6. Holton Parcel												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
7. Right of Way												
MIR Alternative				S						L	L	L
8. Northwestern Parcel												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
9. Low-water Crossing												
LIR Alternative												
10. Southwestern Reserve												
HIR Alternative	L	L		S			S			L	L	L
MIR Alternative	L	L		S			S			L	L	L
LIR Alternative												
11. Air Gunnery Range												
LIR Alternative												
12. East-West Corridor												
MIR Alternative				S							L	L
● Significant Adverse ⊖ Adverse S Short Term Impact ⊕ Beneficial ○ No Impact L Long Term Impact												

generally be assumed to support 43.56 employees. Assuming only half of Study Area 2 were used for high intensity development (because of open space set-asides and non-use of the airfield) and full use of Study Areas 3-6, 8, and 10, there would be 6,430 available acres amenable to high intensity reuse. Assuming, further, that only 20% of all available acreage would be suitable for construction or would be used in well-planned projects, there would be 1,286 developable acres. One-half of the developable acres would be dedicated to purposes other than office space or business park development. Thus, there would be potential for 28,009 jobs upon high intensity reuse of JPG areas. This represents more than 73 percent of the 37,980 jobs in the Region of Influence in 1990. Consistent with the President's Five Point Plan for economic redevelopment of closing military installations, this is interpreted as a long term beneficial impact.

High Intensity Indirect Impacts. It is assumed that reuse development would include attention to associated infrastructure requirements such as roads, utilities, schools, and the like, and that these needs would keep pace with development. It is assumed further that increased tax revenues would be available to fund these infrastructure improvements. Creation of supporting infrastructure on the suggested magnitude would entail long term adverse impacts in several areas: increased contaminant output to streams, increased levels of noise, and increased generation of air pollutants. Loss of the rural character of the immediate JPG environs would be a long term adverse impact related to these study areas.

Medium Intensity Direct Impacts. Nine of the twelve study areas (2-8, 10, 12) would be developed to medium intensity reuse levels under this scenario. However, Study Areas 7 (Right of Way) and 12 (East-West Corridor) would not support jobs-related real estate development. Applying the variables of Table 3-2 in the same manner as in the HIR discussion, there would be some 11,201 jobs created. Consistent with the President's Five Point Plan for economic redevelopment of closing military installations, this is interpreted as a long term beneficial impact.

Medium Intensity Indirect Impacts. Adverse impacts, of a lesser scale and magnitude, would be similar to those described under the HIR scenario.

Low Intensity Direct Impacts. Ten of the twelve study areas (1-6, 8-11) would be involved in this scenario. It is estimated that 10 to 20 personnel would be required to manage the wildlife refuge. Other low intensity land uses would generate an average of 0.05 jobs per acre, yielding creation of between 450 and 500 jobs. This would be a long term beneficial impact.

Low Intensity Indirect Impacts. Creation of up to 500 jobs would not burden existing infrastructure or stress community facilities. No impacts are expected.

5.5.4 Public Health and Safety

High Intensity Direct Impacts. High intensity reuse of Study Areas 2-6, 8, and 10 would result in long term adverse impacts to public health and safety by burdening existing police, fire, and medical capabilities beyond their limits. Compared to the present rural nature of the locality and the knowledge of the dangers attaching to the ranges attributed to residents long affiliated with JPG operations, the influx of people associated with high intensity reuse would increase the potential for trespassing and vandalism in the central portions of the impacts areas, thereby increasing risks of personal injury.

High Intensity Indirect Impacts. No impacts are expected.

Medium Intensity Direct Impacts. Medium intensity reuse of 9 of the 12 study areas would have impacts similar to those of the HIR, except on a lesser scale and magnitude. **However, construction of roads contemplated by Study Areas 7 and 12 would create long term significant adverse impacts because of their proximity to potential unexploded ordnance**

hazards. Construction crews involved in tree clearing operations, grading, paving, and maintenance would be at risk of direct exposure to unexploded ordnance. Fencing and signage notwithstanding, vehicular travelers would be permitted nearer areas presently entered by specially trained professionals familiar with unexploded ordnance and depleted uranium.

Medium Intensity Indirect Impacts. No impacts are expected.

Low Intensity Direct Impacts. The LIR for Study Areas 1-6 and 7-11 is generally comparable to baseline conditions. There would be no impacts expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.5 Utilities and Solid Waste

High Intensity Direct Impacts. No utilities infrastructure exists in Study Areas 3-6, 8, or 10. Except for Study Area 2, high intensity development would require the construction of whole new systems. This substantial level of infrastructure development is considered to be a significant adverse impact over baseline conditions.

Existing utility systems in Study Area 2 have been designed to serve low to medium intensity uses. Utility demands associated with the HIR scenario would require substantial additions, expansions, and extensions of utility systems resulting in an adverse impact to this area.

High Intensity Indirect Impacts. There would be several short term adverse impacts associated with the construction of new utility components under the HIR scenario. These indirect impacts would include those normally associated with the development process including soil disturbance, erosion, siltation of local surface waters resources, loss of plant resources, and possible loss of wildlife habitat. These indirect impacts could occur in Study Areas 3-6, 8, and 10.

Medium Intensity Direct Impacts. This scenario involves medium intensity reuse of Study Areas 2-8, 10, and 12. As only Study Area 2 presently has any developed utility systems, new construction would be required to support development in nine of the areas. As in the HIR scenario, this substantial level of infrastructure development is considered to be a significant adverse impact over baseline conditions for all study areas except Study Area 2.

Medium Intensity Indirect Impacts. Indirect short term adverse impacts would be similar to those in the HIR scenario but to a lesser degree, affecting Study Areas 3-8, 10, and 12.

Low Intensity Direct Impacts. Low intensity reuse of Study Areas 1-6 and 8-11 would require few, if any, utility system changes from the baseline. No adverse impacts are expected to occur.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.6 Visual Resources

High Intensity Direct Impacts. The HIR scenario would substantially alter the natural appearance and character of large portions of the installation, particularly Study Areas 3-6, 8, and 10. Buildings, parking lots, streets, and related facilities would be highly visible intrusions into the existing landscape. Vegetation cover would be removed and the natural contours of the land regraded. These changes would have an adverse impact on the quality and unity of **the installation's** visual resources in Study Areas 3-6, 8, and 10. It is not anticipated that visual resources, already developed in Study Area 2, would be affected. ,

High Intensity Indirect Impacts. No impacts are expected.

Medium Intensity Direct Impacts. The direct impacts of this scenario would be similar to those under high intensity, but of less severity and magnitude. Impacts on visual resources of Study Areas 3-6, 8, and 10 would be adverse and long term. There would be no changes in visual resources in Study Area 2. Inclusion of Study Areas 7 and 12 for construction of roadways would also result in long term adverse impacts.

Medium Intensity Indirect Impacts. No impacts are expected.

Low Intensity Direct Impacts. No impacts are expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.7 Cultural Resources

High Intensity Direct Impacts. It is anticipated that the encumbered disposal alternative would apply to the disposition of properties that contain significant archaeological sites and historic buildings. The deed restrictions made a part of the MOA between the Army, Indiana SHPO, and Advisory Council on Historic Preservation would be applied to the transfer or sale of all JPG National Register eligible properties. Adverse impacts on significant cultural resources would thus be avoided by informing the new owners of all existing significant resources and passing appropriate protection responsibilities to the new owners.

High Intensity Indirect Impacts. No impacts are expected.

Medium Intensity Direct Impacts. As discussed under the HIR scenario, no impacts are expected.

Medium Intensity Indirect Impacts. No impacts are expected.

Low Intensity Direct Impacts. As discussed under the HIS scenario, no impacts are expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.8 Traffic and Transportation

High Intensity Direct Impacts. Compared to baseline conditions, high intensity reuse of Study Areas 2-6, 8, and 10 would result in long term adverse impacts to traffic and transportation. The existing paved road network is located south of the firing line in Study Area 2; roads north of the firing line are not paved. Study areas other than Study Area 2 would be inaccessible from interior portions of the base, resulting in their relying on an off-base road network that is incapable of handling the substantial increases in traffic that would be associated with the influx of people and their transportation needs.

High Intensity Indirect Impacts. Short term adverse impacts including noise, fugitive dust, siltation, plant loss, and wildlife habitat loss would result from road construction to satisfy traffic demands related to Study Areas 3-6, 8, and 10.

Medium Intensity Direct Impacts. Study Areas 28, 10, and 12 would be affected by this scenario. Long term adverse impacts similar to those in the HIR scenario but to a lesser degree would occur.

Construction of roads in Study Areas 7 and 12 would result in long term beneficial impacts on traffic and transportation by providing relief to the local area road network. The utility of

this relief, however, cannot be fully gauged. Route 50, proposed to be realigned so that it would extend across the northern border of the JPG, would connect Study Areas 5, 6, and 8, as well as points to the east and west. A new road, proposed to be laid along "H" Road on base and constituting Study Area 12, is undefined as to the points it might serve other than providing a "short cut" across the base.

Medium Intensity Indirect Impacts. Short term adverse impacts including noise, fugitive dust, siltation, plant loss, and wildlife habitat loss would result from road construction to satisfy traffic demands related to Study Areas 2-6, 8, and 10 and from the new road construction represented by Study Areas 7 and 12.

Low Intensity Direct Impacts. The LIR scenario most closely approximates the past and present uses of Study Areas 1-6 and 8-11. As current traffic and transportation systems are generally adequate, no impacts are expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.9 Noise

High Intensity Direct Impacts. Some commercial and industrial activities that might be included in high intensity reuse produce noise requiring control and abatement measures, typically imposed by local governing entities. While prediction of specific activities and their noise output is speculative, it is reasonable to assume that existing noise control mechanisms would operate properly. No impacts are expected.

High Intensity Indirect Impacts. No impacts are expected.

Medium Intensity Direct Impacts. As discussed under the HIR scenario, no impacts are expected.

Medium Intensity Indirect Impacts. No impacts are expected.

Low Intensity Direct Impacts. As discussed under the HIR scenario, no impacts are expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.10 Air Quality

High Intensity Direct Impacts. Various commercial and industrial activities that might occur as part of high intensity reuse produce air emissions subject to National Ambient Air Quality Standards regulations. Construction required to support high intensity reuse and consequent activities would be subject to the Indiana State Implementation Plan prepared in accordance with the Clean Air Act and its regulations. The JPG lies within Indiana Air Quality Control Region Number 083, an area for which there were no recorded criteria pollutant exceedances of the National Ambient Air Quality Standards in 1992. It is assumed that the level of past regulatory controls will continue, producing conditions in compliance with air quality standards. It is noted, however, that regulatory controls such as permitting encompass only certain types and sizes of sources; activities such as operation of some boilers, use of parts cleaning tanks, and potential increases in traffic may also be present but not fall under direct regulatory scrutiny. No adverse impacts are expected.

High Intensity Indirect Impacts. No impacts are expected.

Medium Intensity Direct Impacts. As discussed under the HIR scenario, no impacts are expected.

Medium Intensity Indirect Impacts. No impacts are expected.

Low Intensity Direct Impacts. As discussed under the HIR scenario, no impacts are expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.11 Geology, Soils, and Topography

High Intensity Direct Impacts. The HIR scenario could result in long term adverse impacts to soil resources and existing landforms in Study Area 4 in the vicinity of Big Creek and Study Area 10 in the vicinities of Big Creek and Middle Fork. Short term adverse impacts to soils as a result of construction buildings, road, and parking lots and installation of utilities would be expected in Study Areas 2-3, 5, 8, and 10.

High Intensity Indirect Impacts. Landform alteration and siltation would create long term adverse impacts on fish inhabiting the many streams originating on or crossing the JPG. Habitat for wildlife and plant could also be adversely affected by construction activities creating siltation and by stormwater runoff bearing contaminants.

Medium Intensity Direct Impacts. Adverse impacts as described under the HIR scenario but to a lesser degree would be expected to occur in Study Areas 2-8, 10, and 12.

Medium Intensity Indirect Impacts. Adverse impacts, on a lesser scale and magnitude, would be similar to those described under the HIR scenario.

Low Intensity Direct Impacts. The LIR for Study Areas 1-6 and 7-11 is generally comparable to baseline conditions. There would be no impacts expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.12 Biological Resources

High Intensity Direct Impacts. The HIR scenario would result in long term significant adverse impacts to wildlife, aquatic, and plant resources in Study Areas 3-6, 8, and 10. Construction causing long term alteration of the landscape and extensive human activity would primarily affect wildlife. The built-up conditions in Study Area 2 make it unlikely that its increase to high intensity reuse would have any new effects on biological resources.

High Intensity Indirect Impacts. Long term adverse effects would be expected in Study Area 1 as wildlife was displaced from habitat in Study Areas 3-6, 8, and 10. Assuming a propensity of wildlife to relocate to areas less affected by humans (e.g., Study Area 1), influx of wildlife from Study Areas 3-6, 8, and 10 could create population crowding and overconsumption of forage.

Medium Intensity Direct Impacts. Adverse impacts as described under the HIR scenario would be expected to occur in Study Areas 3-8 and 10.

Medium Intensity Indirect Impacts. Adverse impacts, on a lesser scale and magnitude, would be similar to those described under the HIR scenario.

Low Intensity Direct Impacts. The LIR for Study Areas 1-6 and 7-11 is generally comparable to baseline conditions. There would be no impacts expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.13 Water Resources

High Intensity Direct Impacts. Stormwater runoff from the JPG contributes to the amount and quality of the base's surface waters. The amount of runoff depends primarily on soil type, vegetative cover, evaporation rates, and recent climatological events. Land development increases runoff by increasing the amount of impervious surface area which readily sheds rainfall. High intensity development can typically involve an impervious surface ratio of 0.70 for office or business park development and an impervious surface ratio of 0.85 for commercial or light industrial development. Study Areas 3-6, 8, and 10 presently have negligible amounts of impervious surfaces. Compared to Study Areas 2-6, 8, and 10 baseline conditions, these types of land uses would result in greatly increased stormwater runoff to the several surface water courses at the JPG and would have a long term adverse impact.

High Intensity Indirect Impacts. Large quantities of stormwater runoff conveying de-icing salts, fuels, lubricants, antifreeze, fertilizer, and pesticides would have long term adverse impacts on aquatic resources and wildlife dependent for food on aquatic resources.

Medium Intensity Direct Impacts. Adverse impacts as described under the HIR scenario but to a lesser degree would be expected to occur in Study Areas 2-8, 10, and 12.

Medium Intensity Indirect Impacts. Adverse impacts, on a lesser scale and magnitude, would be similar to those described under the HIR scenario.

Low Intensity Direct Impacts. The LIR for Study Areas 1-6 and 7-11 is generally comparable to baseline conditions. There would be no impacts expected.

Low Intensity Indirect Impacts. No impacts are expected.

5.5.14 Hazardous Materials and Hazardous Waste

High Intensity Direct Impacts. As discussed in Section 5.4.14, the Army will take necessary remedial actions to protect human health and the environment in any transfer of property.

5.5.15 Mitigation

Specific mitigation actions are not proposed for the general intensity-based reuse scenarios evaluated in this EIS. This is appropriate because specific reuse plans are not available at this time and other (non-Army) entities will be responsible for mitigation of impacts associated with their reuse actions. The following identifies general mitigation actions which could be taken by other parties to reduce impacts of their actions.

Land Use. Adverse impacts associated with development of Study Areas 2-8, 10, and 12 to medium or high intensity use could be reduced through sound site planning and design, creation of appropriate buffer zones, and identification and development of appropriate supporting infrastructure systems.

Socioeconomics and Community Facilities. Adverse impacts arising from too-rapid growth and stressing of community facilities could be avoided by sound planning involving as many interested members of the community as possible.

Public Health and Safety. Adverse impacts to public health and safety can be reduced through design of protective mechanisms. Creation of buffer zones could help keep people away from unexploded ordnance or exposure to depleted uranium. Land uses that would not tend to induce people to enter adjacent areas would also help as a protective measure.

Utilities and Solid Waste. Development of utilities systems capable of adequate levels of support must begin with capacity analyses of services at and near a reuse site. These analyses could help identify utilities services sources and could serve as the foundation for services agreements.

Visual Resources. Existing open areas and potential historic sites would be most impacted by the addition of intensely built environments through the construction of buildings, parking lots, and accessory uses. Mitigation actions that could be taken to reduce or eliminate these actions include

Preparation of site planning guidelines and regulations specifically for the JPG which would contain provisions related to building height, bulk, and setback regulations; landscaping requirements; architectural standards; and other elements of the built environment. Enforcement of any existing zoning, subdivision regulations, and building permits could also offer considerable protection to existing visual resources.

Development and implementation of a Visual Resources Protection Plan by the local redevelopment authority which could identify visual and aesthetic performance objectives, standards, and guidelines for the design and planning of reuse activities.

Use of an architectural or aesthetics review board having authority to review and approve all development and site plans for modification of property or buildings within sensitive zones as established in a Visual Resources Protection Plan.

Cultural Resources. Potential for loss of cultural resources increases with the higher intensity levels of reuse. A potential mitigation measure which could be implemented to avoid or minimize adverse impacts is the use of a special architectural or cultural resource review board.

Traffic and Transportation. Avoidance or minimization of adverse impacts related to traffic and transportation relies strongly on development and implementation of sound master plans for areas on both local and regional bases. Liaison between transportation planners of the three counties comprising the Region of Influence could promote exchange of information allowing each jurisdiction opportunity to keep its plans as up to date as possible.

Noise. Noise impacts are not expected to create adverse impacts. Local zoning controls, properly exercised, would be expected to address potential noise sources by ensuring separation between adjoining property uses, limitations of hours of operation, and other means of noise abatement and control.

Air Quality. The permit system of the CAA generally provides effective control of potential stationary air emissions sources. Adherence to the State Implementation Plan's provisions for mobile sources could address that source category. Additional mechanisms, such as application of best management practices, may be found available to address types and sizes of sources outside regulatory scrutiny (e.g., parts cleaning tanks).

Geology, Soils, and Topography. Mitigation measures that could be used to reduce or avoid soil erosion impacts include

Avoid use of highly erodible soils to the extent possible.

When soils are disturbed, construct de-silting basins, sediment traps, silt fences, straw bale barriers, and other erosion control measures in accordance with guidance in the SCS *Field Engineering Handbook* or by consultation with the Soil Conservation Service (SCS).

Mulch and re-seed disturbed soils in accordance with Soil Conservation Service Critical Area Standards (contained in SCS *Field Engineering Handbook*).

Biological Resources. Adverse impacts to biological resources would occur primarily as results of degradation of surface waters or forced relocation caused by new development and human activity. Effective mitigation measures could include consistent adherence to best management practices for the control of stormwater runoff and creation of buffer zones around new developments.

Water Resources. Mitigation measures listed under soils (above) could aid in reducing sediment loading to streams. Stormwater retention ponds could be constructed to mitigate the impacts associated with new impervious surface area construction.

Hazardous Materials and Hazardous Waste. The Army's commitment to cleanup of all hazardous waste sites consistent with federal, state, and local regulations, and consistent with specific future uses of land, ensures that no adverse impacts will occur.

5.6 CUMULATIVE IMPACTS

Council on Environmental Quality regulations provide that cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Analysis of impacts in this EIS of the no action, encumbered, unencumbered, and three reuse scenarios (HIR, MIR, LIR) has been in terms of effects on resource categories in study areas. The following discussions address the potential cumulative impacts relevant to each of the 3 alternatives and 3 reuse scenarios not only in terms of the 13 resource areas previously analyzed but also in terms of installation-wide or regional levels.

No Action. Compared to the national average, income levels in the ROI are depressed. In 1992, per capita income in the three counties ranged from 73 percent to 85 percent of the national average. Base closure, involving loss of 450 jobs to be replaced in the near term by 30 to 50 jobs during caretaker status, would have an adverse impact on the local economy.

Encumbered Disposal. Unexploded ordnance is the major factor at the JPG. Land use around the JPG is mostly agricultural and forestlands, according the area a rural character. UXO contamination of large areas of the base will prevent various kinds of development or land uses likely that would likely alter the rural character of the area. UXO contamination also severely restrains construction of an east-west road across the installation, resulting in maintenance of the regional road network status quo. Finally, UXO creates conditions which result in a wildlife and plant species "safe haven," an area generally undisturbed by human activity. These effects combine to retard change except at the peripheries of the base; there is the benefit of there being generally slower, more deliberate, and better calculated growth.

Unencumbered Disposal. In the absence of the UXO, DU, remedial measures, and historic resources encumbrances, there would be considerable potential for development and land use pattern changes. Since the JPG is located at the intersection of three counties,

coordinated development in the area could occur only if planning authorities of the counties worked together. With development being unhampered to occur at virtually any location across the 55,264 acres, there would be increased likelihood of adverse impacts to natural resources and the physical environment such as surface water quality. Air, land, and water media would all be affected. There would also be greater likelihood of finding a suitable location to site a regional solid waste facility to serve members counties of the Southwestern Indiana Solid Waste District. A large facility would involve associated impacts of greater stress on roads and increased heavy truck traffic.

High Intensity Reuse. Effects of this scenario would not be confined to the JPG property. Development of base property would be accompanied by development off base. Land use patterns would change; small towns in the vicinity of the base would grow; employment, housing, schools, and public services functions would all change. The agricultural and forestland land uses would change, and the area's rural character would change. If this scenario occurred in conjunction with unencumbered disposal, the magnitude of the changes would be greatly increased. Air, land, and water media would all be affected. Compared to baseline, changes and resultant impacts would be significant. Whether these impacts are beneficial or adverse is not determined.

Medium Intensity Reuse. Change under this scenario would be similar to that under the high intensity reuse scenario, but on a lesser scale, affecting air, land, and water media.

Low Intensity Reuse. Implementation of this scenario would most closely resemble economic activity levels and the natural and physical environment impacts of baseline operations. Regionally, there would be negligible or no impacts to air, land, and water media.

5.7 ENVIRONMENTAL JUSTICE

On February 11, 1994, the President issued Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*. The Order requires that federal agencies conduct their programs, policies, and activities that substantially affect human health or the environment so that there are not disproportionately high and adverse human health or environmental effects on minority populations and low income populations. By memorandum of February 11, 1994, the President directed the EPA to ensure agencies' analyses of environmental effects on minority and low income communities, including human health, social, and economic effects.

The Army's proposed action is not designed to create a benefit for any group or individual. As part of the screening process, entities may express interest in installation assets to provide assistance to the homeless. Upon completion of the screening process, there may be expression of interest by individual(s) or group(s) for purchase by competitive bid or negotiated sale of parts or all of the installation. In either of these cases, the disposal method itself would not create environmental impacts.

Disposal of the JPG does not create disproportionately high or adverse human health or environmental impacts on minority or low income populations of the surrounding community. Income levels in the ROI are generally below the national average. Review and evaluation of the proposed action have not disclosed the existence of identifiable minority or low income communities in the vicinity of the JPG. It does not appear that disposal would affect minority or low income communities.

5.8 CLEAN AIR ACT CONFORMITY

Section 176(c) of the Clean Air Act requires that no federal agency shall engage in, support, or provide financial assistance for, license or permit, or approve any activity which does not conform to an approved or promulgated state implementation plan. Conformity to an

implementation plan means conformity to a plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards. It further refers to conducting activities so that they will not cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard of any required interim emission reductions or other milestones in any area. These foregoing requirements apply regardless of an area's attainment status.

Under Clean Air Act regulations at 40 C.F.R. Part 93, Subpart B, conformity determinations must be made for actions occurring in nonattainment areas and maintenance areas for National Ambient Air Quality Standards for sulfur dioxide, carbon monoxide, ozone, nitrogen oxides, lead, and particulates (matter less than 10 microns in diameter). The proposed action occurs in an attainment area for all these air pollutants; a conformity determination is not required. Moreover, no information has come to light that the proposed action would cause classification of the local air quality district as being in a nonattainment status or otherwise constitute a violation of Section 176(c) of the Clean Air Act as set out in the foregoing paragraph.

5.9 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Adverse environmental impacts which cannot be avoided would occur in the no action, encumbered disposal, and unencumbered disposal alternatives.

No Action. As discussed in Section 5.3, this alternative could result in adverse impacts to visual resources, cultural resources, and public health and safety. Visual resources degradation due to less frequent painting, general cleanup, and the like, while unavoidable, would be negligible. Cultural resources losses during the caretaker period would result from vandalism, relic hunting, or poaching that might increase due to a smaller on-base population to deter such conduct. Elimination of firefighting forces during the caretaker period would increase emergency response times, resulting in greater loss of property.

Encumbered Disposal. None of the direct impacts of this alternative are predicted to be adverse. Indirect adverse impacts extend to socioeconomic resources, utilities and solid waste, traffic and transportation, and noise. None of such impacts are significant.

Unencumbered Disposal. Adverse direct and indirect impacts under this alternative would occur in all resource areas except socioeconomics, utilities and solid waste, and hazardous material and hazardous waste. Except for those arising from elimination of the encumbrance related to cultural resources, none of the impacts are avoidable. Potential adverse impacts relating to cultural resources would be avoidable if the Army maintained its commitment to the state and the Advisory Council on Historic Preservation.

The reuse scenarios involve numerous adverse impacts. Whether they would be unavoidable cannot be determined. This is because the actions would be undertaken in the future by non-Army entities, in ways not presently well enough defined to make estimates on certainties that the impacts would occur.

5.10 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources will have on future generations. Irreversible effects primarily result from use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species).

Disposal of the JPG will not result in any irreversible or irretrievable commitments of resources.

5.11 SHORT TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

Short term uses of the biophysical components of man's environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than five years. Long term uses of man's environment include those impacts occurring over a period of more than five years, including permanent resource loss.

Several kinds of activities could result in short term resource uses that compromise long term productivity. Filling of wetlands or loss of other especially important habitats, conversion of prime or unique farmlands to non-agricultural use, and consumptive use of high quality water at nonrenewable rates are examples of actions having effects on long term productivity.

The no action, encumbered disposal, and unencumbered disposal alternatives would not involve deleterious impacts on maintenance and enhancement of long term productivity

Reuse scenarios evaluated in this EIS assume levels of activity which would produce a wide variety of impacts on resource areas. Short term noise could occur during construction activities. No long term noise impacts are anticipated, and no effects on the maintenance and enhancement of long term productivity would occur. Construction of facilities could result in long term visual intrusion into previously undisturbed landscapes. In addition, short term disturbances of previously undisturbed biological habitats from the construction of new facilities could cause long term reductions in the biological productivity of an area. Short term truck traffic within or between facilities could result in some degradation of roads which could potentially cause a long term decrease in comfort, convenience, and safety for local users. Since reuse plans are not completely known, precise quantification of impacts on long term productivity cannot be achieved.